

## ABSTRACT

An object of the present invention is to provide a hydrotreating catalyst capable of being produced by a simple method and capable of realizing ultra-deep desulfurization of sulfur components in gas oil without requiring severer operating conditions as well as capable of reducing nitrogen components simultaneously, to provide a process for producing the catalyst, and to provide a process for desulfurizing gas oil using the catalyst.

The invention relates to a catalyst containing on an inorganic oxide support 10 to 40% by weight of a metal in the Group 6 of the periodic table, 1 to 15% by weight of a metal in the Group 8 of the periodic table, 1.5 to 8% by weight of phosphorus, each in terms of an oxide amount based on the catalyst, and 2 to 14% by weight of carbon in terms of an element amount based on the catalyst, wherein the catalyst has a specific surface area of 150 to 300 m<sup>2</sup>/g, a pore volume of 0.3 to 0.6 ml/g, and an average pore diameter of 65 to 140 Å, and wherein the catalyst has a certain NO adsorption FT-IR spectrum after sulfidation treatment, a process for producing the catalyst, and a process for desulfurizing gas oil using the catalyst.